



028750-219.ST25

## SEQUENCE LISTING

0110 Pinkins, Randy  
Beddy, M.S. Srinivasa  
Collins, Glenn B.

0120 Transgenic plants expressing MinD or MinE and an efficient  
method for plant chloroplast transformation and gene expression

0130 028750-219

0140 US 10/ 67,989

0141 2002-01-38

0150 US 65/267,483

0161 2001-07-09

0160 18

0170 FastSEQ for Windows Version. 4.0

0210 1

0211 326

0212 PRT

0213 Arabidopsis thaliana

0400 1

Met Ala Ser Leu Arg Leu Phe Ser Thr Asn His Gln Ser Leu Leu Leu  
1 5 10 15  
Pro Ser Ser Leu Ser Gln Lys Thr Leu Ile Ser Ser Pro Arg Phe Val  
20 25 30  
Asn Asn Pro Ser Arg Arg Ser Pro Ile Arg Ser Val Leu Gln Phe Asn  
35 40 45  
Arg Lys Pro Glu Leu Ala Gly Glu Thr Pro Arg Ile Val Val Ile Thr  
50 55 60  
Ser Gly Lys Gly Gly Val Gly Lys Thr Thr Thr Ala Asn Val Gly  
65 70 75 80  
Leu Ser Leu Ala Arg Tyr Gly Phe Ser Val Val Ala Ile Asp Ala Asp  
85 90 95  
Leu Gly Leu Arg Asn Leu Asp Leu Leu Gly Leu Glu Asn Arg Val  
100 105 110  
Asn Tyr Thr Cys Val Glu Val Ile Asn Gly Asp Cys Arg Leu Asp Gln  
115 120 125  
Ala Leu Val Arg Asp Lys Arg Trp Ser Asn Phe Glu Leu Leu Cys Ile  
130 135 140  
Ser Lys Pro Arg Ser Lys Leu Pro Met Gly Phe Gly Gly Lys Ala Leu  
145 150 155 160  
Glu Trp Leu Val Asp Ala Leu Lys Thr Arg Pro Glu Gly Ser Pro Asp  
165 170 175  
Phe Ile Ile Ile Asp Cys Pro Ala Gly Ile Asp Ala Gly Phe Ile Thr  
180 185 190  
Ala Ile Thr Pro Ala Asn Glu Ala Val Leu Val Thr Thr Pro Asp Ile  
195 200 205  
Thr Ala Leu Arg Asp Ala Asp Arg Val Thr Gly Leu Leu Glu Cys Asp  
210 215 220  
Gly Ile Arg Asp Ile Lys Met Ile Val Asn Arg Val Arg Thr Asp Met  
225 230 235 240

Ile Lys Gly Glu Asp Met Met Ser Val Leu Asp Val Gln Glu Met Leu  
 245 250 255  
 Gly Leu Ser Leu Leu Gly Val Ile Pro Glu Asp Ser Glu Val Ile Arg  
 260 265 270  
 Ser Thr Asn Arg Gly Phe Pro Leu Val Leu Asn Lys Pro Pro Thr Leu  
 275 280 285  
 Ala Gly Leu Ala Phe Glu Gln Ala Ala Trp Arg Leu Val Glu Gln Asp  
 290 295 300  
 Ser Met Lys Ala Val Met Val Glu Glu Glu Pro Lys Lys Arg Gly Phe  
 305 310 315 320  
 Phe Ser Phe Phe Gly Gly  
 325

0210 - 1

0211 - 184

0212 - PRT

0213 - *Chlorella vulgaris*

0400 - 1

Met Val Phe Ser Thr Gly Asn Gly Asn Gly Asp Asp Asn Ser Lys Gly  
 1 5 10 15  
 Leu Glu Arg Val Ile Val Ile Thr Ser Gly Lys Gly Gly Val Gly Lys  
 20 25 30  
 Thr Thr Thr Thr Ala Asn Leu Gly Met Ser Ile Ala Arg Leu Gly Tyr  
 35 40 45  
 Arg Val Ala Leu Ile Asp Ala Asp Ile Gly Leu Arg Asn Leu Asp Leu  
 50 55 60  
 Leu Leu Gly Leu Glu Asn Arg Val Leu Tyr Thr Ala Met Asp Ile Val  
 65 70 75 80  
 Glu Gly Gln Cys Arg Leu Asp Glu Ala Leu Ile Arg Asp Lys Arg Trp  
 85 90 95  
 Lys Asn Leu Ala Leu Leu Ala Ile Ser Lys Asn Arg Gln Lys Tyr Asn  
 100 105 110  
 Val Thr Arg Lys Asn Met Gln Asn Leu Ile Asp Ser Val Lys Glu Leu  
 115 120 125  
 Gly Phe Gln Phe Val Leu Ile Asp Cys Pro Ala Gly Ile Asp Val Gly  
 130 135 140  
 Phe Ile Asn Ala Ile Ala Ser Ala Gln Glu Ala Val Ile Val Thr Thr  
 145 150 155 160  
 Pro Glu Ile Thr Ala Ile Arg Asp Ala Asp Arg Val Ala Gly Leu Leu  
 165 170 175  
 Glu Ala Asn Gly Ile Tyr Asn Val Lys Leu Leu Val Asn Arg Val Arg  
 180 185 190  
 Pro Asp Met Ile Gln Lys Asn Asp Met Met Ser Val Arg Asp Val Gln  
 195 200 205  
 Glu Met Leu Gly Ile Pro Leu Leu Gly Ala Ile Pro Glu Asp Thr Ser  
 210 215 220  
 Val Ile Ile Ser Thr Asn Lys Gly Glu Pro Leu Val Leu Asn Lys Lys  
 225 230 235 240  
 Leu Thr Leu Ser Gly Ile Ala Phe Glu Asn Ala Ala Arg Arg Leu Ile  
 245 250 255  
 Gly Lys Gln Asp Tyr Phe Ile Asp Leu Thr Ser Pro Gln Lys Gly Met  
 260 265 270  
 Phe Gln Lys Leu Gln Glu Phe Phe Leu Gly Glu Glu  
 275 280

0210- 3  
 0211- 266  
 0212- PRT  
 0213- *Synechocystis*

0400- 3  
 Met Asn Arg Ile Ile Val Val Thr Ser Gly Lys Gly Gly Val Gly Lys  
 1 5 10 15  
 Thr Thr Thr Thr Ala Asn Leu Gly Ala Ala Leu Ala Arg Leu Gly Lys  
 20 25 30  
 Lys Val Val Leu Ile Asp Ala Asp Phe Gly Leu Arg Asn Leu Asp Leu  
 35 40 45  
 Leu Leu Gly Leu Glu Gln Arg Ile Val Tyr Thr Ala Ile Asp Val Leu  
 50 55 60  
 Ala Asp Glu Cys Thr Ile Asp Lys Ala Leu Val Lys Asp Lys Arg Leu  
 65 70 75 80  
 Pro Asn Leu Val Leu Leu Pro Ala Ala Gln Asn Arg Ser Lys Asp Ala  
 85 90 95  
 Ile Asn Ala Glu Gln Met Gln Ser Leu Val Glu Gln Leu Lys Asp Lys  
 100 105 110  
 Phe Asp Tyr Ile Ile Ile Asp Cys Pro Ala Gly Ile Glu Ala Gly Phe  
 115 120 125  
 Arg Asn Ala Val Ala Pro Ala Gln Glu Ala Ile Ile Val Thr Thr Pro  
 130 135 140  
 Glu Met Ser Ala Val Arg Asp Ala Asp Arg Val Ile Gly Leu Leu Glu  
 145 150 155 160  
 Ala Glu Asp Ile Gly Lys Ile Ser Leu Ile Val Asn Arg Leu Arg Pro  
 165 170 175  
 Glu Met Val Gln Leu Asn Gln Met Ile Ser Val Glu Asp Ile Leu Asp  
 180 185 190  
 Leu Leu Ala Val Pro Leu Ile Gly Ile Leu Pro Asp Asp Gln Lys Ile  
 195 200 205  
 Ile Ile Ser Thr Asn Lys Gly Glu Pro Leu Val Met Glu Glu Lys Leu  
 210 215 220  
 Ser Val Pro Gly Leu Ala Phe Gln Asn Ile Ala Arg Arg Leu Glu Gly  
 225 230 235 240  
 Gln Asp Ile Pro Phe Leu Asp Phe Met Ala Ala His Asn Thr Leu Leu  
 245 250 255  
 Asn Arg Ile Arg Arg Arg Leu Leu Gly Gly  
 260 265

0210- 4  
 0211- 173  
 0212- PRT  
 0213- *Escherichia coli*

0400- 4  
 Met Ala Arg Ile Ile Val Val Thr Ser Gly Lys Gly Gly Val Gly Lys  
 1 5 10 15  
 Thr Thr Ser Ser Ala Ala Ile Ala Thr Gly Leu Ala Gln Lys Gly Lys  
 20 25 30  
 Lys Thr Val Val Ile Asp Phe Asp Ile Gly Leu Arg Asn Leu Asp Leu  
 35 40 45  
 Ile Met Gly Cys Glu Arg Arg Val Val Tyr Asp Phe Val Asn Val Ile  
 50 55 60  
 Gln Gly Asp Ala Thr Leu Asn Gln Ala Leu Ile Lys Asp Lys Arg Thr

65					70					75				80
310	Asn	Leu	Tyr	Ile	Leu	Pro	Ala	Ser	Gln	Thr	Arg	Asp	Lys	Asp
				95					90					95
Leu	Thr	Arg	Glu	Gly	Val	Ala	Lys	Val	Leu	Asp	Asp	Leu	Lys	Ala
			100					105					110	Met
Asp	Phe	Glu	Phe	Ile	Val	Cys	Asp	Ser	Pro	Ala	Gly	Ile	Glu	Thr
		115				120						125		Gly
Ala	Leu	Met	Ala	Leu	Tyr	Phe	Ala	Asp	Glu	Ala	Ile	Ile	Thr	Thr
		131				135					140			Asn
Pro	Glu	Val	Ser	Ser	Val	Arg	Asp	Ser	Asp	Arg	Ile	Leu	Gly	Ile
		145			150					155				160
Ala	Ser	Lys	Ser	Arg	Arg	Ala	Glu	Asn	Gly	Glu	Glu	Pro	Ile	Lys
			165					170						175
His	Leu	Leu	Leu	Thr	Arg	Tyr	Asn	Pro	Gly	Arg	Val	Ser	Arg	Gly
			180					185					190	Asp
Met	Leu	Ser	Met	Glu	Asp	Val	Leu	Glu	Ile	Leu	Arg	Ile	Lys	Leu
		195				200						205		Val
Gly	Val	Ile	Pro	Glu	Asp	Gln	Ser	Val	Leu	Arg	Ala	Ser	Asn	Gln
		210				215					220			Gly
Glu	Pro	Val	Ile	Leu	Asp	Ile	Asn	Ala	Asp	Ala	Gly	Lys	Ala	Tyr
		225			230				235					240
Asp	Thr	Val	Glu	Arg	Leu	Leu	Gly	Glu	Glu	Arg	Pro	Phe	Arg	Phe
			245					250						255
Glu	Glu	Glu	Lys	Lys	Gly	Phe	Leu	Lys	Arg	Leu	Phe	Gly	Gly	
		260						265					270	

-0110- 6

-0111- 87

-0112- PRT

-0113- Synechocystis sp.

-0114- 6

Met	Ile	Leu	Glu	Leu	Ile	Glu	Arg	Leu	Phe	Ser	Arg	Ser	Gly	Lys	Asn
1				5					10					15	
Ser	Gly	Glu	Asp	Ala	Arg	Arg	Arg	Leu	Lys	Leu	Val	Ile	Ala	Asn	Asp
			20					25					30		
Arg	Ser	Gly	Leu	Ser	Pro	Glu	Met	Met	Glu	Glu	Met	Arg	Arg	Glu	Ile
			35				40					45			
Val	Glu	Val	Val	Ser	Arg	Tyr	Val	Glu	Ile	Asp	Pro	Gly	Glu	Met	Glu
		50				55				60					
Phe	Ser	Leu	Glu	Ser	Asp	Gln	Arg	Met	Thr	Ala	Leu	Ile	Ala	Asn	Leu
		65			70				75					80	
Pro	Val	Arg	Arg	Val	Arg	Arg	Thr	Lys	Ala	Lys	Ser	Glu	Ala	Gln	Glu
				85				90						95	

Ser

-0116- 6

-0117- 88

-0118- PRT

-0119- Guillardia theta

-0400- 6

Met	Ile	Thr	Glu	Phe	Phe	Glu	Arg	Leu	Phe	Leu	Ser	Asn	Lys	Gly	Ser
1				5					10					15	

Arg Glu Asp Val Lys Arg Arg Leu Lys Leu Val Leu Ala His Asp Arg  
 20 25 30  
 Ser Thr Leu Asn Ala Ser Thr Leu Glu Lys Met Arg Glu Glu Ile Leu  
 35 40 45  
 Leu Val Val Ser Lys Tyr Val Glu Leu Asp Thr Asp Ser Leu Glu Phe  
 50 55 60  
 Ser Ile Arg Thr Asp Ser Lys Met Thr Ala Leu Ile Ala Asn Leu Pro  
 65 70 75 80  
 Ile Arg Arg Ile Leu Lys Asp Ile  
 85

-C110- 7

-C111- 198

-C112- PRT

-C113- *Chlorella protothecoides*

-C114- 7

Met Ala Thr Leu Leu Gln Gln Gly Thr Phe Ala Pro His Arg Ser Trp  
 1 5 10 15  
 Ser Gly Arg Lys Gly Thr Arg Arg Val Ser Lys Pro Thr Leu Asn Arg  
 20 25 30  
 Leu His Val Arg Ser Ser Ser Lys Ala Gly Ala Gly Pro Val Ser Asp  
 35 40 45  
 Ala His Leu Ala His Leu Arg Asn Ala Gly His Pro Val Pro Glu Ala  
 50 55 60  
 Pro Gly Leu Gln Gly Phe Val Ala Lys Leu Lys Ala Ala Trp Gln Ile  
 65 70 75 80  
 Phe Phe Pro Glu Lys Pro Pro Val Leu Thr Pro Lys Asp Glu Gly Lys  
 85 90 95  
 Asn Arg Leu Arg Met Ile Leu Val Ala Asp Arg Cys Gly Ile Thr Pro  
 100 105 110  
 Asp Ser Leu Thr Gly Met Arg Glu Ser Ile Val Gln Ala Val Ser Ala  
 115 120 125  
 Tyr Val Asp Ile Glu Thr Glu Glu Ile Glu Val Asn Leu Ser Thr  
 130 135 140  
 Arg Pro Glu Leu Gly Thr Ile Tyr Ser Val Ala Val Pro Val Arg Arg  
 145 150 155 160  
 Val Lys Ser Arg Arg Ile Gly Gly Val Asp Thr Ser Glu Asp Gly Lys  
 165 170 175  
 Ile Ile Val Lys Trp Asp Pro Lys Asp Pro Asn Ser Asp Pro Ser Asp  
 180 185 190  
 Gln Phe Pro Phe Gly Val  
 195

-C110- 8

-C111- 88

-C112- PRT

-C113- *Escherichia coli*

-C114- 8

Met Ala Leu Leu Asp Phe Phe Leu Ser Arg Lys Lys Asn Thr Ala Asn  
 1 5 10 15  
 Ile Ala Lys Glu Arg Leu Gln Ile Ile Val Ala Glu Arg Arg Arg Ser  
 20 25 30  
 Asp Ala Glu Pro His Tyr Leu Pro Gln Leu Arg Lys Asp Ile Leu Glu

[illegible]

- CC10 - 3
- CC11 - 17
- CC12 - BPT
- CC13 - *Neisseria meningitidis*

[illegible]

```

%I10> 10
%I11> 84
%I12> PFT
%I13> Pseudomonas aeruginosa

```

Met Ser Leu Leu Asp Phe Phe Arg Ser Arg Lys Ser Gln Asn Ser Ala																
<div style="text-align: center;">1                      5                      10                      15</div>																
Ser Ile Ala Lys Glu Arg Leu Gln Ile Ile Val Ala His Glu Arg Gly																
<div style="text-align: center;">20                      25                      30</div>																
Gln Arg Ala Gln Pro Asp Tyr Leu Pro Gln Leu Gln Lys Asp Leu Leu																
<div style="text-align: center;">35                      40                      45</div>																
Glu Val Ile Arg Lys Tyr Val Pro Ile Asp Gln Glu Gln Ile Gln Val																
<div style="text-align: center;">50                      55                      60</div>																
Glu Leu Glu Asn Gln Gly Asn Cys Ser Ile Leu Glu Leu Asn Ile Thr																
<div style="text-align: center;">65                      70                      75                      80</div>																
Leu Pro Asp Arg																

- U10: 11
- U11: 229
- U12: PFT
- U13: *Arabidopsis thaliana*

1400: 11  
 Met Ala Met Ser Ser Gly Thr Leu Arg Ile Ser Ala Thr Leu Val Ser  
 1 5 10 15

```

Pro Tyr His His His His Arg Asn Arg Leu Ser Leu Pro Ser Ser Ser
      20      25      30
Ser Lys Val Asp Phe Thr Gly Phe Ile Ser Asn Gly Val Asn Ser Leu
      35      40      45
Glu Thr Gln Lys Cys Thr Pro Gly Leu Ala Ile Ser Arg Glu Asn Thr
      50      55      60
Arg Gly Gln Val Lys Val Leu Ala Arg Asn Thr Gly Asp Tyr Glu Leu
      65      70      75      80
Ser Pro Ser Pro Ala Glu Gln Glu Ile Glu Ser Phe Leu Tyr Asn Ala
      85      90      95
Ile Asn Met Gly Phe Phe Asp Arg Leu Asn Leu Ala Trp Lys Ile Ile
      100      105      110
Phe Pro Ser His Ala Ser Arg Arg Ser Ser Asn Ala Arg Ile Ala Lys
      115      120      125
Gln Arg Leu Lys Met Ile Leu Phe Ser Asp Arg Cys Asp Val Ser Asp
      130      135      140
Glu Ala Lys Arg Lys Ile Val Asn Asn Ile Ile His Ala Leu Ser Asp
      145      150      155      160
Phe Val Glu Ile Glu Ser Glu Glu Lys Val Gln Leu Asn Val Ser Thr
      165      170      175
Asp Gly Asp Leu Gly Thr Ile Tyr Ser Val Thr Val Pro Val Arg Arg
      180      185      190
Val Lys Pro Glu Tyr Gln Asp Val Asp Glu Ala Gly Thr Ile Thr Asn
      195      200      205
Val Glu Tyr Lys Asp Thr Arg Asp Gly Ser Val Asp Val Arg Phe Asp
      210      215      220
Phe Tyr Val Pro Glu
225

```

```

+210+ 12
+211+ 13
+212+ DNA
+213+ Artificial Sequence

```

```

+220+
+223+ primer

```

```

+400+ 11
ttctgagaat ggctctctg agattgttc

```

29

```

+210+ 13
+211+ 22
+212+ DNA
+213+ Artificial Sequence

```

```

+220+
+223+ primer

```

```

+400+ 15
ttctagatt gccatctagc cgcctaaag

```

28

```

+210+ 14
+211+ 22
+212+ DNA
+213+ Artificial Sequence

```

```

0220>
0223> primer

0400> 14
agtctctcgg taatggcgat gt                22

0210> 15
0211> 13
0212> DNA
0213> Artificial Sequence

0220>
0223> primer

0400> 15
gactgtacct ttccatcaact ct                22

0210> 16
0211> 13
0212> DNA
0213> Artificial Sequence

0220>
0223> primer

0400> 16
ttgagctcac ctccaacatt aaaatcgaac ctg    33

0210> 17
0211> 13
0212> DNA
0213> Artificial Sequence

0220>
0223> primer

0400> 17
ttgaccttat gagtaaagga gaagaact          28

0210> 18
0211> 23
0212> DNA
0213> Artificial Sequence

0220>
0223> primer

0400> 18
attattttgta tagttcatcc atg              23

```